

**EMBEDDED DIGITAL BEAM FORMING****ABSTRACT OF THE DISCLOSURE**

Disclosed is a system utilizing a multi-beam antenna that switches the beams to a CDMA demodulation receiver in such a way that the best beams are selected. The transmit path takes the traffic channel outputs from the CDMA modulators and maps each traffic channel to the subset of beams that have the best path to the mobile in the forward link. Accordingly, the system operates to reduce interference on both the forward and reverse links, as well as to increase the capacity of both the forward and reverse links. The system also is capable of providing flexible dynamic shaping of the cell and the sectors by mapping the appropriate overhead channels on the forward link and the reverse link in different combinations of beams to sectors in order to shape the cell. Adaptive arrays may be utilized to form radiation patterns, for which the azimuthal width and/or length of a sector may be adjusted by way of adjustments of the relative amplitude and phase of signal components of signals at antennas of a phased array adaptively controlled according to communication parameters such as information indicating the quality of the communication channel on that sector, interference from other channels or the number of calls serviced in particular sectors.

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